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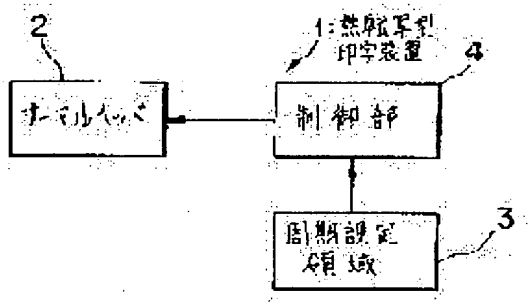
## (54) HEAT-TRANSFER TYPE PRINTING DEVICE AND ACCUMULATED ERROR CORRECTING METHOD FOR THE SAME

(57)Abstract:
PURPOSE: To hold an accurate printing location, and improve the printing quality by easily correcting the accumulated slip of a printing location due to a carrying error, for a thermal transfer type printing device which performs a thermal transfer printing while carrying and moving a printing objective medium to a fixed type thermal head, and its accumulated error correcting method.
CONSTITUTION: A thermal transfer type printing device 1 performs a thermal transfer printing by a thermal head 2 while carrying and moving a printing objective medium to the fixed type thermal head 2. Such a thermal transfer type printing device 1 is constituted by providing a cycle-setting region 3 where a fire cycle of the thermal head 2 at the time of thermal transfer printing is previously set, and a control unit 4 which controls the driving of the thermal head 2 by the fire cycle which is set in the cycle-setting region 3.

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CLAIMS

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[Claim(s)]
[Claim 1] The hot printing mold printer characterized by offering the control section which carries out actuation control of this thermal head said fire period set as the periodic setting-out field beforehand set up in the fire period of this thermal head at the time of hot printing printing, and this periodic setting-out field in the hot printing mold printer which performs hot printing printing by this thermal head while carrying out conveyance migration of the medium for printing to a fixed thermal head.
[Claim 2] Are generated in the hot printing mold printer which performs hot printing printing by this thermal head while carrying out conveyance migration of the medium for printing to a fixed thermal head. It is the approach of amending the accumulated error of the printing location accompanying the conveyance error of this medium for printing. By this hot printing mold printer The test data which ends printing in a convention printing termination location when it prints in the condition that said accumulated error has not arisen, to the medium for a test is printed. The error of the actual printing termination location of this test data and said convention printing termination location is computed as said accumulated error. The fire period of this thermal head at the time of hot printing printing according to the error concerned is set as the periodic setting-out field of this hot printing mold printer. By this hot printing mold printer The accumulated-error amendment approach in a hot printing mold printer characterized by carrying out actuation control of this thermal head said fire period set as this periodic setting-out field, and performing hot printing printing.
[Claim 3] The accumulated-error amendment approach in a hot printing mold printer according to claim 2 that the fire period of this thermal head at the time of hot printing printing according to the error of the actual printing termination location of this test data and said convention printing termination location is beforehand table-ized as a translation table, and is characterized by setting the fire period according to said error as this periodic setting-out field of this hot printing mold printer with reference to this translation table.
[Claim 4] The accumulated-error amendment approach in a hot-printing mold printer according to claim 3 characterized by to set automatically the fire period according to the error which read the actual printing result of this test data by the photo sensor, computed the error of the actual printing termination location of this test data, and said convention printing termination location based on the reading result by this photo sensor, and was computed with reference to this translation table as this periodic setting-out field of this hot-printing mold printer.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the accumulated-error amendment approach in the hot printing mold printer and this equipment which perform hot printing printing, carrying out conveyance migration of the medium for printing to a fixed thermal head.
[0002]
[Description of the Prior Art] Generally, in the issue-of-banknotes machine which issues tickets (medium for printing), such as an airline ticket, in order to print to a ticket, the printer of a hot printing mold is used, and hot printing printing is performed, carrying out conveyance migration of the media for printing, such as a ticket and the recording paper, to a fixed thermal head.
[0003] And impression of an electrical potential difference to a thermal head is usually always performed by such hot printing mold printer with the fixed fire period (printing line pulse separation).
[0004]
[Problem(s) to be Solved by the Invention] By the way, in a hot printing mold printer which was mentioned above, dust etc. adheres to the conveyance roller for carrying out conveyance migration of the medium for printing, or wear with time etc. arises, and the path of a conveyance roller changes as it prints. Thus, when the diameter of a roller changes, the conveyance error of the medium for printing will arise, a cumulative error (accumulation gap) will arise in the printing location to the medium for printing by the thermal head, and deterioration of a quality of printed character will be caused. Such an accumulation gap becomes large when the printing length of 1 end of a road becomes long especially.
[0005] For example, since the amount of conveyances to the thermal head of the medium for printing becomes large even if it is the same rotation when the path of a conveyance roller becomes large by adhesion of dust etc., in case one line is printed, the actual printing termination location of the line will turn into a location beyond an ideal printing termination location. On the contrary, since the amount of conveyances to the thermal head of the medium for printing becomes small even if it is the same rotation when the path of a conveyance roller becomes small by wear etc., in case one line is printed, the actual printing termination location of the line will turn into a front location from an ideal printing termination location.
[0006] As it was originated in view of such a technical problem and this invention can correct simply an accumulation gap of the printing location by the conveyance error, it aims at offering the accumulated-error amendment approach in the hot printing mold printer and this equipment which held the exact printing location and aimed at improvement in a quality of printed character.

[0007]
[Means for Solving the Problem] In this drawing 1 , 1 is the hot printing mold printer of this invention, this hot printing mold printer 1 performs hot printing printing by the thermal head 2, carrying out conveyance migration of the medium for printing to the fixed thermal head 2, and drawing 1 is the principle block diagram of this invention, and it is constituted [ it has the periodic setting-out field 3 and control section 4 other than a thermal head 2, and ].

[0008] Here, the periodic setting-out field 3 is beforehand set up in the fire period of the thermal head 2 at the time of hot printing printing, and a control section 4 carries out actuation control of the thermal head 2 the fire period set as the periodic setting-out field 3 (claim 1). Moreover, the accumulated-error amendment approach in the hot printing mold printer of this invention is for amending the accumulated error of the printing location accompanying the conveyance error of the medium for printing produced in the hot printing mold printer (what performs hot printing printing while carrying out conveyance migration of the medium for printing to the fixed thermal head 2) 1 which was mentioned above in drawing 1 , and amends an accumulated error according to the following procedures.
[0009] ** Print the test data which ends printing in a convention printing termination location when it prints in the condition that the accumulated error has not arisen, to the medium for a test by the hot printing mold printer 1. ** Compute the error of the actual printing termination location of a test data, and a convention printing termination location as an accumulated error. ** Set the fire period of the thermal head 2 at the time of hot printing printing according to the error concerned as the periodic setting-out field 3 of the hot printing mold printer 1, carry out actuation control of the thermal head 2 the fire period set as the periodic setting-out field 3 by ** hot printing mold printer 1, and perform hot printing printing.
[0010] The fire period of the thermal head 2 at the time of hot printing printing according to the error of the actual printing termination location of a test data and a convention printing termination location is beforehand table-ized as a translation table, and you may make it set the fire period according to said error as the periodic setting-out field of the hot printing mold printer 1 with reference to this translation table at this time (claim 3).
[0011] Moreover, the actual printing result of a test data is read by the photo sensor, the error of the actual printing termination location of a test data and a convention printing termination location is computed based on the reading result by the photo sensor, and you may make it set the fire period according to the computed error as the periodic setting-out field 3 of the hot printing mold printer 1 automatically with reference to said translation table (claim 4).
[0012]
[Function] in the hot printing mold printer 1 of this invention mentioned above in drawing 1 , actuation control of the thermal head 2 can be carried out by coming out the fire period of the arbitration which sets the thing of arbitration as the periodic setting-out field 3 beforehand about the fire period of a thermal head 2 and which was set as the periodic setting-out field 3 by the control section 4 at the time of hot printing printing. Therefore, it becomes possible by changing the fire period of a thermal head 2 into a suitable thing to correct an accumulation gap of the printing location for location amendment in a dot unit to be possible about the migration direction (the printing direction) of the medium for printing, and according to a conveyance error (claim 1).
[0013] Moreover, by the accumulated-error amendment approach of this invention, as mentioned above, the error of the actual printing termination location and actual convention printing termination location of a test data which were printed to the medium for a test is computed as an accumulated error. By setting the fire period of the thermal head 2 according to the error as the periodic setting-out field 3 of the hot printing mold printer 1, it becomes possible to correct an accumulation gap of the printing location for location amendment in a dot unit to be possible about the migration direction (the printing direction) of the medium for printing, and according to a conveyance error (claim 2).
[0014] At this time, it can set up only by referring to this translation table by setting up beforehand the fire period according to the computed accumulated error as a translation table, without computing a suitable fire period one by one (claim 3). Moreover, it becomes possible to automate setting out of the fire period according to an accumulated error which does not need to measure an accumulated error one by one by handicraft etc., and was mentioned above by detecting an accumulated error by the photo sensor (claim 4).
[0015]
[Example] Hereafter, the example of this invention is explained with reference to a drawing. The concrete equipment with which the hot printing mold printer of this example is applied is an

airline ticket issuance machine as shown in drawing 7 . In drawing 7 , the internal stacker (hopper) 33 for storing insertion opening with which the airline ticket (un-recording and non-printed ticket) with which an airline ticket issuance machine and 30 become the case of the airline ticket issuance machine 29, and 31 becomes a medium for printing (medium for magnetic recording) is inserted in 29, and the airline ticket (issuance ticket) with which 32 performed printing record and magnetic recording is an exhaust port which discharges the airline ticket (issuance ticket) to which printing and magnetic recording were performed.

[0016] The display (LCD) to which 34 performs a required guidance display etc. on the occasion of issue-of-banknotes processing, the indicator (LED) with which 35 displays the operating state of the airline ticket issue-of-banknotes machine 29 etc., and 36 are various kinds of actuation keys operated in case data required for issue-of-banknotes processing etc. are inputted. The airline ticket (medium for printing) 37 of the shape of a continuation medium as shown in drawing 10 is stored in the interior of such an airline ticket issuance machine 29 in the condition of having folded up in the location of the folds 38 and 38 of ends, and the airline ticket 37 is taken out at the time of the issue of banknotes, predetermined printing record and magnetic recording are performed, and it is discharged.

[0017] Moreover, in order to enable it to separate one continuation medium-like airline ticket 37 easily at each time of the issue of banknotes, while a perforation 39 is formed in a part for the center section of a fold 38, it cuts deeply on both sides of the perforation 39, and the sections 40 and 40 are formed. Furthermore, the perforation 41 for dividing an airline ticket 37 into an airline ticket 37 with a help at the time of the activity of a ticket is formed in two places, and also the magnetic stripe 42 in which magnetic information is written is formed in the rear face of an airline ticket 37.

[0018] In addition, perforations 39 and 41 are formed by arranging the 2mm cut section and the 1mm uncut-edges section by turns. Next, drawing 8 explains the general internal functional configuration of the airline ticket issuance machine 29 mentioned above. In drawing 8 , 12 is the pulse motor which carries out conveyance migration of the airline ticket 37 by driving the belt device 43, and actuation control of this pulse motor 12 is carried out by Motor Driver 12a.

[0019] CPU which controls in generalization a sensor for 13 to detect the conveyance location of an airline ticket 37, and the airline ticket issuance machine 29 including the hot printing mold printer 10 of this example which 14 mentions later (main control section), The reception-control section for 15 to receive magnetic recording or the data which should carry out printing record from an external device to an airline ticket 37, and 18 are RAM used as a work area etc. at the time of the control action of CPU14. These sensors 13, CPU14, the reception-control section 15, and RAM18 are explained in full detail later as an element which constitutes the hot printing mold printer 10.

[0020] Moreover, the reproducing head for a recording head for the sensor amplifier which 44 amplifies the output of a sensor 13 and is inputted into CPU14, and 45 to write magnetic information in the magnetic stripe 42 of an airline ticket 37, and 46 to reproduce the magnetic information written in the magnetic stripe 42 of an airline ticket 37, the amplifier which 47 amplifies the output of the reproducing head 46 and are inputted into CPU14, and 48 are the printing sections which come to have the thermal head later mentioned in order printing on the side front of an airline ticket 37.

[0021] In addition, the example of a printing location specification of the airline ticket 37 with which it is printed by the printing section 48 is shown in drawing 10 . Usually, one alphanumeric alphabetic character etc. is printed in each grid within the limits of the grid frame which shows the field printed on an airline ticket 37 by the airline ticket issuance machine 29 to drawing 10 . In the example shown in drawing 10 , printing of 18 lines is given to a longitudinal direction by 72 characters in a lengthwise direction. Moreover, the concrete example of printing over an airline ticket 37 is shown in drawing 11 .

[0022] Although drawing 2 and drawing 3 explain the configuration of the hot printing mold printer of this example applied to the airline ticket issuance machine mentioned above in drawing 7 and drawing 8 below, to the component which achieves the same function as the part shown in drawing 8 , the same sign is attached and explained among these drawing 2 and drawing 3 .

Drawing 2 is the block diagram showing the hardware configuration of the hot printing mold printer as one example of this invention, 10 is the hot printing mold printer (printer) of this example in this drawing 2 , it has a thermal head 11, the transmission-control section 16, and ROM17, and this printer 10 is constituted while having a pulse motor 12, a sensor 13, CPU14, the reception-control section 15, and RAM18 among the components mentioned above in drawing 8 . In addition, in drawing 2 R> 2, the graphic display of Motor Driver 12a shown by drawing 8 and the sensor amplifier 44 is omitted, and also the graphic display of the part which does not constitute the hot printing mold printer 10 of this example is omitted.

[0023] Here, by being contained in the printing section 48 mentioned above in drawing 8 , impressing an electrical potential difference a predetermined fire period (printing line pulse separation), and generating heat, a thermal head 11 performs hot printing printing to the airline ticket 37 (refer to drawing 8 - drawing 11 ) which is a medium for printing, and has become fixed by this example. A pulse motor 12 serves as a driving source for carrying out conveyance migration of the airline ticket 37 to the fixed thermal head 11, and a sensor 13 is for detecting the conveyance location of an airline ticket 37.

[0024] CPU14 is for controlling the hot printing mold printer 10 of this example in generalization, and has the transfer-control section 19, the printing control section 20, and the system management section 21. The transfer-control section 19 is for controlling actuation of a pulse motor 12 and controlling the conveyance condition of an airline ticket 37 based on the conveyance location detection result of the airline ticket 37 from a sensor 13.

[0025] Moreover, the printing control section 20 is for controlling the operating state of a thermal head 11, and has the function as printing line pulse-separation control-section (control section) 20A which carries out actuation control of the thermal head 11 a predetermined fire period so that it may mention later by drawing 3 in this example. Furthermore, the system management section 21 is for carrying out supervisory control of the actuation of the system (the transfer-control section 19, printing control-section 20 grade) of this example, and it also has the function as printing location judging section 21A and correction value computation section 21B by this example so that it may mention later by drawing 3 , so that it may mention later.

[0026] The reception-control section 15 receives printing data from the high order equipment which is not illustrated, and sends them to the system management section 21, and the transmission-control section 16 performs transmission and advice of printing termination, error generating, etc. to high order equipment etc. according to the directions from the system management section 21. Various programs and data required in order that ROM17 may operate the hot printing mold printer 10 of this example are stored, and translation table (printing line pulse-separation table) 17A later mentioned by drawing 3 and drawing 4 to this ROM17 is stored in this example.

[0027] When RAM18 is constituted by CMOS etc. and CPU14 is performing motion control of the hot printing mold printer 10 of this example, it is used as a work area and periodic setting-out field 18A later mentioned by drawing 3 R> 3 to this RAM18 is prepared in this example. In addition, fundamental actuation of the hot printing mold printer 10 shown in drawing 3 is explained below.

[0028] The printing data received from high order equipment etc. in the reception-control section 15 are passed to the system management section 21. The carrier beam system management section 21 starts the transfer-control section 19 for printing data. Actuation control of the pulse motor 12 is carried out by this transfer-control section 19, the medium for printing (airline ticket 37) is picked out from a stacker (not shown), and it is conveyed to the location of the thermal head 11 which is the printing section. Then, the system management section 21 passes the printing data which started the printing control section 20 and were received.

[0029] And the printing control section 20 is combined with the conveyance condition of the airline ticket 37 on the thermal head 11 by the transfer-control section 19, and performs electrical-potential-difference impression to a thermal head 11. At this time, by this example, according to the conveyance error correction value (fire period) set as periodic setting-out field

18A of RAM18 which consists of CMOS etc., the period which performs electrical-potential-difference impression to a thermal head 11 by the printing control section 20 is amended so that it may mention later in drawing 3 .

[0030] Drawing 3 explains the functional configuration of the hot printing mold printer of this example. In this drawing 3 , 17A is a translation table (printing line pulse-separation table) beforehand stored in ROM17. As specifically shown in drawing 4 , the value of the printing line pulse separation from which some differ is set as this translation table 17A. the fire period in the condition (at the time of a criterion) of having not produced an accumulation gap in translation table 17A shown in drawing 4 — 728.00microsec ** — it carries out and the correction value of printing line pulse separation is set up for every 0.25microsec. Moreover, n shows the value corresponding to the correction time (microsecondec) of the fire period for amending an accumulation gap so that it may mention later in drawing 6 .

[0031] 18A is a periodic setting-out field beforehand secured to RAM18 which consists of CMOS etc., and the correction value of the printing line pulse separation according to the accumulation gap by which reading appearance was carried out from translation table 17A is actually stored in this periodic setting-out field 18A. 20A is the printing line pulse-separation control section offered on the printing control section 20, and this printing line pulse-separation control-section 20A amends a fire period according to the correction value set as periodic setting-out field 18A of RAM18, and performs electrical-potential-difference impression control to a thermal head 11 with the amended fire period as it mentioned above.

[0032] 21A and 21B are the printing location judging sections and the correction value computation sections which were offered on the system control section 21, respectively, and such printing location judging section 21A and correction value computation section 21B are for performing accumulated-error amendment based on the result of having read the printing location to the medium 23 for a test by the optical sensor 22 for printing location reading so that it might mention later in drawing 6 .

[0033] Here, the optical sensor 22 for printing location reading is for reading the actual printing result of a test data, as later mentioned in drawing 6 . Moreover, printing location judging section 21A judges the actual printing termination location of a test data, and a convention printing termination location based on the reading result by the photo sensor 22, and computes the error. And by computing the correction time of the fire period for amending an accumulation gap based on the error computed by printing location judging section 21A, and searching translation table 17A based on the correction time, correction value computation section 21B calculates the correction value of the printing line pulse separation according to correction time, and sets it as periodic setting-out field 18A of RAM18 automatically.

[0034] Next, it explains according to the flow chart (steps S1-S6) which shows actuation of the hot printing mold printer 10 of this example constituted like **** to drawing 5 , referring to drawing 6 . First, before performing the usual printing actuation by the hot printing mold printer 10, detection processing of an accumulation gap (accumulated error) is performed (step S1 of drawing 5 ).

[0035] When it prints in the condition that the accumulation gap has not arisen, to the medium 23 for a test as shown in drawing 6 by the hot printing mold printer 10 on the occasion of detection processing of this accumulation gap, the test data which ends printing in a convention printing termination location is printed. As shown on the medium 23 for a test at drawing 6 R> 6, the marks 23A and 23B for convention printing position representation are printed by the suitable line in the convention printing starting position of a test data, and the convention printing termination location, respectively.

[0036] Such a medium 23 for a test is set in the hot printing mold printer 10, and a test data is printed in the printing direction in the line under one of the lines by which the marks 23A and 23B for convention printing position representation were printed. Here, the hot printing mold printer 10 of this example shall print only 1 dot every 0.1mm at the time of a criterion (at the time of the condition that there is no accumulation gap), and presupposes that between the marks 23A and 23B for convention printing position representation is 40cm.

[0037] In such setting out, it is a test data for 4000 dots (inside of drawing 6 , "XXXX--") from

mark 23for convention printing position representation A. If there is no accumulation gap when it prints, printing will be ended in the location of mark 23B for convention printing position representation. however, when a certain conveyance error occurs, for example, dust etc. adheres to a conveyance roller (not shown) and the diameter of a roller becomes large As the amount of conveyances of an airline ticket 37 becomes large also with the same rotation, for example, it is shown in drawing 6 , even if it prints the test data for 4000 dots from mark 23for convention printing position representation A, actual printing It will not end in the location (convention printing termination location) of mark 23B for convention printing position representation, but the location will be exceeded.

[0038] At this time, as shown in drawing 6 , the actual printing termination location should exceed by 10 dots from the location of mark 23B for convention printing position representation. In this example, such a actual printing result is read by the photo sensor 22, and is inputted into printing location judging section 21A. In printing location judging section 21A, based on the reading result by the photo sensor 22, the actual printing termination location of a test data and a convention printing termination location (location of mark 23B for convention printing position representation) are judged, and the error ( drawing 5 10 dots) is computed.

[0039] The 1st sensor which more specifically performs sensing of the marks 23A and 23B as a photo sensor 22 in the line by which the marks 23A and 23B for convention printing position representation were printed, and the 2nd sensor which performs sensing of a test printing result in the line under one of them are offered. At the time of reading of a test printing result, while reading the number of steps of the spacing H of Marks 23A and 23B by said 1st sensor and measuring it, the number of steps of spacing H' of a actual test printing result is read by said 2nd sensor, and is measured, and an accumulation gap is computed as a difference of the number of steps measured by the 1st sensor in printing location judging section 21A, and the number of steps measured by the 2nd sensor.

[0040] And in correction value computation section 21B, the correction time of the fire period for amending an accumulation gap is computed based on the accumulation gap computed by printing location judging section 21A. Here, as shown in translation table 17A of drawing 4 , it is 728.00microsec about the fire period at the time of a criterion. If it carries out and the accumulation gap will be converted into the amount of time amount gaps per 1 fire period, it is 10-dot / [4000 dot] x728.00microsec =1.82microsec. It becomes. that is, 1 fire period -- 1.82microsec only -- by setting up quickly, an accumulation gap of the printing location accompanying a conveyance error can be amended.

[0041] As shown in drawing 4 , however, in translation table 17A it mentioned above -- as -- 0.25microsec every -- since correction value is set up, correction value computation section 21B - 1.82microsec Nearest n=-1.75microsec The correction value of the printing line pulse separation at the time, -7 [ i.e., ], is searched, and the correction value -7 is automatically set as periodic setting-out field 18A of RAM18 (program-timer amendment clock value setting-out processing; step S2 of drawing 5 ).

[0042] Then, it will usually pass, printing conveyance will be started (the starting lock -> through rise of a pulse motor 12; step S3 of drawing 5 ), and the accumulated-error amendment control (fire periodic control by printing line pulse-separation control-section 20A performed based on the value set as periodic setting-out field 18A) by this example will be in enabling state with printing initiation (step S4 of drawing 5 R> 5).

[0043] Moreover, with printing termination, the accumulated-error amendment control by this example will be in a disabling condition (step S5 of drawing 5 ), and will end printing conveyance (the halt lock of the through down -> pulse motor 12; step S6 of drawing 5 ). Thus, according to one example of this invention, during hot printing printing, the fire period which performs electrical-potential-difference impression to a thermal head 11 by the printing control section 20 is amended according to the conveyance error correction value (fire period) according to the accumulation gap set as periodic setting-out field 18A of RAM18.

[0044] By this, location amendment in a dot unit is performed about the printing direction, it becomes possible to correct an accumulation gap of the printing location by the conveyance error, an exact printing location is held, and a quality of printed character improves substantially.

Moreover, since it can set up according to this example, without computing a suitable fire period one by one by using translation table 17A Can correct very simply an accumulation gap of the printing location by the conveyance error, and also by detecting an accumulated error by the photo sensor 22 It is not necessary to measure an accumulated error one by one by handicraft etc., setting out of the fire period according to an accumulation gap can be automated, and correction of an accumulation gap of the printing location by the conveyance error can be simplified further.

[0045] In addition, although the example mentioned above explained the case where translation table 17A, printing location judging section 21A, and correction value computation section 21B were offered on the interior of the hot printing mold printer 10, it is not necessary to necessarily offer these things into the hot printing mold printer 10, and they may be offered on the system which performs test printing. Moreover, you may offer into the hot printing mold printer 10 also at a photo sensor 22, and may offer on the system which performs test printing.

[0046] Moreover, although this invention was applied to the airline ticket issuance machine and the case where the medium for printing was an airline ticket was explained in the example mentioned above, this invention is not limited to this, when printing to various tickets, the recording paper, etc., it is applied like the above-mentioned example, and can acquire the same operation effectiveness.

[0047]

[Effect of the Invention] As explained in full detail above, according to the hot printing mold printer (claim 1) of this invention, there is effectiveness which it is possible to correct the accumulated error of the printing location by the conveyance error, holds an exact printing location, and can improve a quality of printed character substantially only by setting a suitable fire period as a periodic setting-out field.

[0048] Moreover, according to the accumulated-error amendment approach (claim 2) in the hot printing mold printer of this invention By searching for an accumulated error from the actual printing termination location and convention printing termination location which were obtained by test printing, and setting the suitable fire period according to the error as the periodic setting-out field of a hot printing mold printer There is effectiveness which it is possible to correct the accumulated error of the printing location by the conveyance error, holds an exact printing location, and can improve a quality of printed character substantially.

[0049] At this time, by using a translation table, it can set up without computing a suitable fire period one by one, and is effective in the ability to correct now very simply the accumulated error of the printing location by the conveyance error (claim 3). Moreover, since it becomes unnecessary to measure an accumulated error one by one by handicraft etc. and setting out of the fire period according to an accumulated error can be automated by detecting an accumulated error by the photo sensor, there is effectiveness which can simplify further correction of the accumulated error of the printing location by the conveyance error (claim 4).

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## DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the principle block diagram of this invention.
[Drawing 2] It is the block diagram showing the hardware configuration of the hot printing mold printer as one example of this invention.
[Drawing 3] It is the block diagram showing the functional configuration of the hot printing mold printer of this example.
[Drawing 4] It is drawing showing an example of the translation table (printing line pulse-separation table) in this example.
[Drawing 5] It is a flow chart for explaining actuation of this example.
[Drawing 6] It is drawing showing the medium for a test and the actual example of a printing result in this example.
[Drawing 7] It is the external view of the airline ticket issuance machine with which the equipment of this example is applied.
[Drawing 8] It is the block diagram showing the general internal functional configuration of an airline ticket issuance machine.
[Drawing 9] It is drawing showing the example of an arrangement location specification of the magnetic stripe in the configuration of an airline ticket, and an airline ticket.
[Drawing 10] It is drawing showing the example of a printing location specification in an airline ticket.
[Drawing 11] It is drawing showing the example of printing over an airline ticket.
[Description of Notations]
1 Hot Printing Mold Printer
2 Thermal Head
3 Periodic Setting-Out Field
4 Control Section
10 Hot Printing Mold Printer (Printer)
11 Thermal Head
12 Pulse Motor
13 Sensor
14 CPU
15 Reception-Control Section
16 Transmission-Control Section
17 ROM
17A Translation table (printing line pulse-separation table)
18 RAM
18A Periodic setting-out field
19 Transfer-Control Section
20 Printing Control Section
20A Printing line pulse-separation control section (control section)
21 System Management Section
21A Printing location judging section

21B Correction value computation section
22 Optical Sensor for Printing Location Reading
23 Medium for Test
23A, 23B Mark for convention printing position representation
29 Airline Ticket Issuance Machine
30 Case
31 Insertion Opening
32 Internal Stacker
33 Exhaust Port
34 Display (LCD)
35 Indicator (LED)
36 Actuation Key
37 Airline Ticket (Medium for Printing, Recording Paper)
38 Fold
39 41 Perforation
40 Slitting Section
42 Magnetic Stripe
43 Belt Device
44 Sensor Amplifier
45 Recording Head
46 Reproducing Head
47 Amplifier
48 Printing Section

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[Translation done.]